

cathode electrode and the gate electrode on the support substrate;

preparing a plating suspension by suspending the micro-bodies in a plating solution for the metal plating layer; and

forming the metal plating layer on the first side surface of the cathode electrode by dipping the intermediate structure in the plating suspension and subjecting the intermediate structure to a plating process, the metal plating layer comprising the micro-bodies dispersed therein.

#### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

FIG. 1 is a sectional view showing a flat image display device as an example of a vacuum micro-device to which a field emission cold cathode device of a lateral type according to an embodiment of the present invention is applied;

FIG. 2 is a partial plan view of the device shown in FIG. 1;

FIG. 3 is a sectional view of the main part of the device shown in FIG. 1;

FIG. 4A is an enlarged view showing the relationship between rod-shaped micro-bodies such as carbon nanotubes and a metal plating layer, and FIG. 4B is an enlarged view showing the relationship between granular micro-bodies such as fullerenes and a metal plating layer;

FIG. 5 is an enlarged view showing the relationship between hollow rod-shaped micro-bodies and a filler layer;

FIGS. 6A to 6C are views showing a method of manufacturing a field emission cold cathode device of a lateral type according to another embodiment of the present invention in the order of steps; and

FIGS. 7A to 7C are views showing a method of manufacturing a field emission cold cathode device of a lateral type according to still another embodiment of the present invention in the order of steps.

#### DETAILED DESCRIPTION OF THE INVENTION

The embodiments of the present invention will be described with reference to the accompanying drawings. In the following description, constituent elements having substantially the same function and arrangement are denoted by the same reference numerals, and a repetitive description will be made when necessary.

FIG. 1 is a sectional view showing a flat image display device as an example of a vacuum micro-device to which a field emission cold cathode device of a lateral type according to an embodiment of the present invention is applied. FIG. 2 is a partial plan view of this device, and FIG. 3 is a sectional view of the main part of this device.

As shown in FIG. 2, this display device has pairs of cathode electrodes 22 and gate electrodes 24 to